

REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed February 24, 2005. In the Office Action, claims 1-4, 6, 7, 9-11, 13, 24, 25, 27, 29-31, 33, 41-44, 46-48, 50, and 56 are preliminarily rejected under 35 USC§102(b) as being anticipated. Claims 5, 12, 14-16, 18-23, 26, 28, 32, 35-37, 39, 40, 45, 49, and 51-54 are preliminarily rejected under 35 USC§103(a) as being obvious. Claims 8, 17, 34, 38, and 55 are objected to as being dependent on a rejected base claim.

In this response claims 1, 24, 34, 41 and 56 have been amended, claim 7 has been cancelled without prejudice, and claims 57-59 have been newly added. Reconsideration and allowance of the subject application and presently pending claims 1-6 and 8-59 is respectfully requested.

I. Response to Claim Rejections based on Anticipation

In the Office Action, claims 1-4, 6, 7, 9-11, 13, 24, 25, 27, 29-31, 33, 41-44, 46-48, and 50 are preliminarily rejected under 35 USC§102(b) as being anticipated by U.S. Patent No. 5,550,925 to Hori, et al. (hereinafter, "Hori"). Claim 56 is preliminarily rejected under 35 USC§102(b) as being anticipated by U.S. Patent No. 5,974,156 to Sauvagurd (hereinafter, "Sauvagurd"). For a proper rejection of a claim under 35 USC§102(b), the cited reference must disclose all elements/features/steps of the claim. See, e.g., E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 7 USPQ2d 1129 (Fed. Cir. 1988).

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A. Claim 1

Newly amended claim 1 presently reads as follows:

1. An audio processor comprising:
a variable filter receiving an input signal and
providing an output signal, said variable filter having a
fixed cutoff frequency and a quality factor that is
controllable in response to a control signal; and
**a control circuit configured to detect a signal
level in the output signal representative of the input
signal level** in a selected band and to generate the
control signal in response to the detected signal level,
**wherein a magnitude of the control signal is a
function of an amplitude of the output signal within
the selected band.**

(Emphasis Added)

In the Office Action, claim 1 is preliminarily rejected under 35 USC§102(b) as being anticipated by Hori. As disclosed, Hori is a sound-processing device for attenuating the low-frequency signal of an input audio signal, whereby it is possible to suppress a noise component in sound without impairing sound quality.

Hori fails to teach or disclose all elements of claim 1. For clarification purposes, the Applicant has added the language, wherein a magnitude of the control signal is a function of an amplitude of the output signal within the selected band. Hori clearly does not teach or disclose this limitation.

The control circuit of Hori is also not configured to detect a signal level in the output signal representative of the input signal level. The claimed arrangement allows the bass frequency band to be controlled, for example, as a

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function of a high frequency band of the output signal. As explained on page 2 of the Office Action, claim 1 was preliminarily rejected based on the teachings of Hori in relation to FIG. 1 of Hori. FIG. 1 of Hori, and the text related thereto, teaches detecting a signal level in the input signal – the control circuit (elements 5-8) is fed solely by the input signal (element 1, microphone). As the control circuit of FIG. 1 is not configured to receive the output signal, this embodiment of Hori cannot be said to teach or disclose all elements of claim 1.

Alternatively, FIGS. 8 (cited in relation to original claim 7) and 12 of Hori, and the text related thereto, teach detecting a signal level in the output signal. However, the signal level detected from the output signal is not representative of the input signal. The variable filter(/equalizer) of FIGS. 8 and 12 decreases the level of the low-frequency component of the audio signal and the control circuit (led by BPF 5) extracts the low-frequency component [col. 8, line 65 – col.9, line 1]. As the control circuit of FIGS. 8 and 12 of Hori is construed to detect a portion of a signal that is significantly modified from its input signal state (indeed, the modification is the purpose of the invention of Hori), the signal level detected from the output signal may be argued to not be representative of the input signal.

As Hori does not teach or disclose a control circuit configured to detect a signal level in the output signal representative of an input signal level, wherein a magnitude of the control signal is a function of an amplitude of the output signal within the selected band, the Applicant respectfully requests the withdrawal of the preliminary anticipation rejection.

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B. Claims 2-4, 6, 7, 9-11, and 13

The Applicant respectfully submits that since claims 2-4, 6, 7, 9-11, and 13 depend on independent claim 1, claims 2-4, 6, 7, 9-11, and 13 contain all limitations of independent claim 1. Since independent claim 1 should be allowed, as argued above, pending dependent claims 2-4, 6, 7, 9-11, and 13 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

1. Claim 6

The Applicant respectfully submits that Hori does not disclose or teach a control circuit configured to establish an inverse relationship between the quality factor of the variable filter and the detected signal level. As a result the Applicant respectfully submits that Hori does not anticipate claim 6 and allowance of claim 6 is respectfully requested.

C. Claim 24

Newly amended claim 24 presently reads as follows:

24. An audio processor comprising:
a variable filter receiving an input signal and providing a filtered output signal, said variable filter having a fixed cutoff frequency and a quality factor that is controllable in response to a control signal;
a low-pass filter for selecting a band of the output signal;
a detector for detecting a signal level in the band selected by the low-pass filter and for generating the control signal in response to the detected signal level;
and

***wherein said variable filter further comprises
a variable gain element responsive to the control
signal and configured to amplify a bass frequency
band of the input signal, and
wherein a magnitude of the control signal is a
function of an amplitude of the output signal within
the selected band.***

(Emphasis Added)

In the Office Action, claim 24 is preliminarily rejected under 35 USC§102(b) as being anticipated by Hori. As disclosed, Hori is a sound-processing device for attenuating the low-frequency signal of an input audio signal, whereby it is possible to suppress a noise component in sound without impairing sound quality.

Hori fails to teach or disclose all elements of claim 24. For clarification purposes, the Applicant has added the language, wherein a magnitude of the control signal is a function of an amplitude of the output signal within the selected band. Hori clearly does not teach or disclose this limitation.

Page 3 of the Office Action cites to FIG. 8 of Hori as evidence that Hori anticipates the claimed invention. The control circuit of Hori, as described in relation to FIG. 8, fails to teach a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input signal. Hori is directed to decreasing and/or attenuating the low-frequency component of the input signal.

As Hori does not teach or disclose a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input

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signal, the Applicant respectfully requests the withdrawal of the preliminary anticipation rejection.

D. Claims 25, 27, 29-31, and 33

The Applicant respectfully submits that since claims 25, 27, 29-31, and 33 depend on independent claim 24, claims 25, 27, 29-31, and 33 contain all limitations of independent claim 24. Since independent claim 24 should be allowed, as argued above, pending dependent claims 25, 27, 29-31, and 33 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

E. Claim 41

Newly amended claim 41 presently reads as follows:

41. An audio processing method comprising:
filtering an input signal in a variable filter and
providing a filtered output signal;
detecting a signal level representative of input
signal level in a selected band to provide a detected
signal level; and
***amplifying a bass frequency band of the input
signal*** in response to the detected signal level.
(Emphasis Added)

In the Office Action, claim 41 is preliminarily rejected under 35 USC§102(b) as being anticipated by Hori. As disclosed, Hori is a sound-processing device for attenuating the low-frequency signal of an input audio signal, whereby it is possible to suppress a noise component in sound without impairing sound quality.

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Hori fails to teach or disclose all steps of claim 41. As explained on page 2 of the Office Action, claim 41 was preliminarily rejected based on the teachings of Hori in relation to FIG. 1 of Hori. However, Hori is directed toward attenuating or decreasing the low-frequency band of the input signal. The presently claimed invention, however, is directed toward amplifying a base frequency band of the input signal.

As Hori does not teach or disclose amplifying a base frequency band of the input signal, the Applicant respectfully requests the withdrawal of the preliminary anticipation rejection.

F. Claims 42-44, 46-48, and 50

The Applicant respectfully submits that since claims 42-44, 46-48, and 50 depend on independent claim 41, claims 42-44, 46-48, and 50 contain all limitations of independent claim 41. Since independent claim 41 should be allowed, as argued above, pending dependent claims 42-44, 46-48, and 50 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

G. Claim 56

Newly amended claim 56 presently reads as follows:

56. (Currently Amended) An audio processor comprising:
a state variable digital high-pass filter receiving an input data stream and providing a filtered output data stream, said digital filter having a fixed cutoff

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frequency and a quality factor that is controllable in response to a control variable;

a digital band select filter for selecting a band of the output data stream;

a detector algorithm for detecting a signal level in the band selected by the digital band select filter and for generating the control variable in response to the detected signal level; and

wherein the state variable digital high-pass filter includes a lookup table for establishing a desired relationship between the quality factor of the state variable digital high-pass filter and the detected signal level.

(Emphasis Added)

In the Office Action, claim 56 is preliminarily rejected under 35 USC§102(b) as being anticipated by Sauvagerd. Sauvagerd teaches a digital circuit for influencing the frequency response of a digital audio circuit. The digital circuit includes a signal filter having variable filter coefficients.

Sauvagerd fails to teach or disclose all elements of claim 56. As explained on page 3 of the Office Action, claim 56 was preliminarily rejected based on the teachings of Sauvagerd in relation to FIG. 1 of Sauvagerd. Sauvagerd at least does not disclose or teach determining a lookup table for establishing a desired relationship between the quality factor of the state variable digital high-pass filter and the detected signal level. The presently claimed invention is directed toward a lookup table for establishing a desired relationship between the quality factor of the state variable digital high-pass filter and the detected signal level.

As Sauvagerd does not disclose or teach determining a lookup table for establishing a desired relationship between the quality factor of the state

variable digital high-pass filter and the detected signal level, the Applicant respectfully requests the withdrawal of the preliminary anticipation rejection.

II. Response To Claim Rejections Based On Obviousness

In the Office Action, claims 5, 26, 28, and 45 are preliminarily rejected under 35 USC §103(a) as being unpatentable over Hori. In the Office Action, claims 22-23 and 39-40 are preliminarily rejected under 35 USC §103(a) as being unpatentable over Hori in view of U.S. Patent No. 4,696,044 to Waller, Jr. (hereinafter, "Waller"). In the Office Action, claims 12, 32, and 49 are preliminarily rejected under 35 USC §103(a) as being unpatentable over Hori in view of U.S. Patent 5,172,358 to Kimura (hereinafter, "Kimura"). In the Office Action, claims 14-16, 18-21, 35-37, and 51-54 are preliminarily rejected under 35 USC §103(a) as being unpatentable over Hori in view of Sauvagerd.

It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must teach, disclose, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, e.g., In re Dow Chemical, 5 U.S.P.Q. 2d 1529, 1531 (Fed. Cir. 1988), and In re Keller, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981).

A. Claim 5

In the Office Action, claim 5 is preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori. Claim 5 is directed toward an

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attack time constant of the control signal. Claim 5 is dependent on claim 1. As explained in Section I.A. of this response, the control circuit of Hori does not, in any embodiments, detect a signal level in the output signal representative of the input signal level, which is a limitation of claim 1. As Hori does not teach this limitation, which is part of claim 5 through claim 1, Hori fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claim at issue. In addition, Hori fails to teach, disclose, or suggest the magnitude of the control signal being a function of an amplitude of the output signal within the selected band.

Therefore, as Hori fails to teach, disclose, or suggest, either implicitly or explicitly, the above-mentioned elements, the Applicant respectfully requests the Examiner withdraw this obviousness rejection.

B. Claim 12

In the Office Action, claim 12 is preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori in view of Kimura. Claim 12 is directed toward controlling base audio frequencies to limit the Fletcher-Munson effect. Claim 12 is dependent on claim 1. As explained in Section I.A. of this response, the control circuit of Hori does not, in any embodiments, detect a signal level in the output signal representative of the input signal level, which is a limitation of claim 1. Similarly, Kimura does not, in any embodiments, detect a signal level in the output signal representative of the input signal level. As neither Hori, nor Kimura teach this limitation, which is part of claim 12 through claim 1,

Hori in view of Kimura fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claim at issue. In addition, Hori and Kimura fail to teach, disclose, or suggest the magnitude of the control signal being a function of an amplitude of the output signal within the selected band.

Therefore, as Hori in view of Kimura fails to teach, disclose, or suggest, either implicitly or explicitly, the above-mentioned elements of claim 12, the Applicant respectfully requests that the Examiner withdraw this obviousness rejection.

C. Claims 14-16 and 18-21

In the Office Action, claims 14-16 and 18-21 are preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori in view of Sauvagerd. Claims 14-16 and 18-21 are directed toward digitalizing the audio processor. Claims 14-16 and 18-21 are dependent on claim 1. As explained in Section I.A. of this response, the control circuit of Hori does not, in any embodiments, detect a signal level in the output signal representative of the input signal level, which is a limitation of claim 1. Similarly, Sauvagerd does not, in any embodiments, detect a signal level in the output signal representative of the input signal level. As neither Hori, nor Sauvagerd teach this limitation, which is part of claims 14-16 and 18-21 through claim 1, Hori in view of Sauvagerd fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claim at issue. In addition, Hori and Sauvagerd fail to teach, disclose, or suggest the magnitude of the control

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signal being a function of an amplitude of the output signal within the selected band.

Therefore, as Hori in view of Sauvagerd fails to teach, disclose, or suggest, either implicitly or explicitly, the above-mentioned elements, the Applicant respectfully requests the Examiner withdraw this obviousness rejection.

D. Claims 22 and 23

In the Office Action, claims 22 and 23 are preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori in view of Waller. Claims 22 and 23 are directed toward circuitry for controlling the quality factor in response to the control signal. Claims 22 and 23 are dependent on claim 1. As explained in Section I.A. of this response, the control circuit of Hori does not, in any embodiments, detect a signal level in the output signal representative of the input signal level, which is a limitation of claim 1. Similarly, Waller does not, in any embodiments, detect a signal level in the output signal representative of the input signal level. As neither Hori, nor Waller teach these elements, which are part of claims 22 and 23, through claim 1, Hori in view of Waller fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claim at issue. In addition, Hori fails to teach, disclose, or suggest the magnitude of the control signal being a function of an amplitude of the output signal within the selected band.

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Therefore, as Hori in view of Waller fails to teach, disclose, or suggest, either implicitly or explicitly, the above-mentioned elements, the Applicants respectfully request the Examiner withdraw this obviousness rejection.

E. Claims 26 and 28

In the Office Action, claims 26 and 28 are preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori. Claims 26 and 28 are directed toward an attack time constant of the control signal and a cutoff frequency of the variable filter, respectively. Claim 26 and 28 are dependent on claim 24. As explained in Section I.C. of this response, the Hori does not teach, disclose, or suggest, in any embodiments, a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input signal, which is a limitation of claim 24. As Hori does not teach this limitation, which is part of claims 26 and 28, through claim 24, Hori fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claim at issue. In addition, Hori fails to teach, disclose, or suggest the magnitude of the control signal being a function of an amplitude of the output signal within the selected band.

As Hori does not teach, disclose, or suggest the above-references elements, the Applicant respectfully requests the withdrawal of the preliminary obviousness rejection.

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F. Claim 32

In the Office Action, claim 32 is preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori in view of Kimura. Claim 32 is directed toward controlling base frequencies to limit the Fletcher-Munson effect. Claim 32 is dependent on claim 24. As explained in Section I.C. of this response, Hori does not teach, disclose, or suggest, in any embodiments, a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input signal, which is a limitation of claim 24. Similarly, Kimura does not teach, disclose, or suggest, in any embodiments, a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input signal. As neither Hori, nor Kimura teach this limitation, which is part of claim 32, through claim 24, Hori in view of Kimura fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claim at issue. In addition, Hori and Kimura fail to teach, disclose, or suggest the magnitude of the control signal being a function of an amplitude of the output signal within the selected band.

Therefore, as Hori in view of Kimura fails to teach, disclose, or suggest, either implicitly or explicitly, the above-referenced elements, the Applicant respectfully requests the withdrawal of the preliminary obviousness rejection.

G. Claims 35-37

In the Office Action, claims 35-37 are preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori in view of Sauvagerd. Claims 35-

37 are directed toward digitalizing the audio processor. Claims 35-37 are dependent on claim 24. As explained in Section I.C. of this response, Hori does not teach, disclose, or suggest, in any embodiments, a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input signal, which is a limitation of claim 24. Similarly, Sauvagerd does not teach, disclose, or suggest, in any embodiments, a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input signal. As neither Hori, nor Sauvagerd teach these limitations, which are part of claims 35-37 through claim 24, Hori in view of Sauvagerd fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claims at issue. In addition, Hori and Sauvagerd fail to teach, disclose, or suggest the magnitude of the control signal being a function of an amplitude of the output signal within the selected band.

Therefore, as Hori in view of Sauvagerd fails to teach, disclose, or suggest, either implicitly or explicitly, the above-referenced elements, the Applicant respectfully requests the withdrawal of the preliminary obviousness rejection.

H. Claims 39 and 40

In the Office Action, claims 39 and 40 are preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori in view of Waller. Claims 39 and 40 are directed toward circuitry for controlling the quality factor in response to the control signal. Claims 39 and 40 are dependent on claim 24. As explained

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in Section I.C. of this response, Hori does not teach, disclose, or suggest, in any embodiments, a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input signal, which is a limitation of claim 24. Similarly, Waller does not teach, disclose, or suggest, in any embodiments, a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input signal. As neither Hori, nor Waller teach this limitation, which is part of claims 39 and 40, through claim 24, Hori in view of Waller fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claims at issue. In addition, Hori and Waller fail to teach, disclose, or suggest the magnitude of the control signal being a function of an amplitude of the output signal within the selected band.

Therefore, as Hori in view of Waller fails to teach, disclose, or suggest, either implicitly or explicitly, the above-referenced elements, the Applicant respectfully requests the withdrawal of the preliminary obviousness rejection.

I. Claim 45

In the Office Action, claim 45 is preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori. Claim 45 is directed toward an attack time constant of the control signal. Claim 45 is dependent on claim 41. As explained in Section I.E. of this response, the control circuit of Hori does not teach, disclose, or suggest, in any embodiments, amplifying a base frequency band of the input signal, which is a limitation of claim 41. As Hori does not teach this limitation, which is part of claim 45, through claim 41, Hori fails to teach,

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disclose, or suggest, either implicitly or explicitly, all elements of the claim at issue.

Therefore, as Hori fails to teach, disclose, or suggest, either implicitly or explicitly, detecting a signal level in the output signal representative of the input signal level, the Applicant respectfully requests that the Examiner withdraw this obviousness rejection.

J. Claim 49

In the Office Action, claim 49 is preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori in view of Kimura. Claim 49 is directed toward controlling base frequencies to limit the Fletcher-Munson effect. Claim 49 is dependent on claim 41. As explained in Section I.E. of this response, the control circuit of Hori does not teach, disclose, or suggest, in any embodiments, amplifying a base frequency band of the input signal, which is a limitation of claim 41. Similarly, Kimura does not teach, disclose, or suggest, in any embodiments, amplifying a base frequency band of the input signal. As neither Hori, nor Kimura teach this limitation, which is part of claim 49, through claim 41, Hori in view of Kimura fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claim at issue.

Therefore, as Hori in view of Kimura fails to teach, disclose, or suggest, either implicitly or explicitly, a variable gain element responsive to the control signal and configured to amplify a bass frequency band of the input signal, the

Applicant respectfully requests the withdrawal of the preliminary obviousness rejection.

K. Claims 51-54

In the Office Action, claims 51-54 are preliminarily rejected under 35 USC§103(a) as being unpatentable over Hori in view of Sauvagerd. Claims 51-54 are dependent on claim 41. As explained in Section I.E. of this response, the control circuit of Hori does not teach, disclose, or suggest, in any embodiments, amplifying a base frequency band of the input signal, which is a limitation of claim 41. Similarly, Sauvagerd does not teach, disclose, or suggest, in any embodiments, amplifying a base frequency band of the input signal. As neither Hori, nor Sauvagerd teach this limitation, which is part of claims 51-54 through claim 41, Hori in view of Sauvagerd fails to teach, disclose, or suggest, either implicitly or explicitly, all elements of the claim at issue.

Therefore, as Hori in view of Sauvagerd fails to teach, disclose, or suggest, either implicitly or explicitly, the elements of claims 51-54, the Applicant respectfully requests the withdrawal of the preliminary obviousness rejection.

III. New Claims 57-59

Claims 57 – 59 have been added in the present Response. Specifically, claim 57 is former claim 8 written in independent format as recommended in the Office Action, claim 58 is former claim 17 written in independent format as recommended in the Office Action, and claim 59 is former claim 55 written in

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independent format as recommended in the Office Action. Since claims 8, 17, and 55 were stated to be allowable is rewritten in independent form including all of the limitation of the base claim and any intervening claims, the Applicant respectfully requests allowance of claims 57-59.

IV. Prior Art Made Of Record

The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

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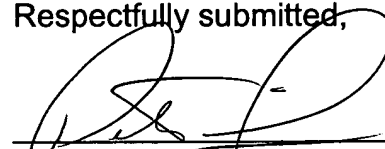
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CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and rejections have been traversed, rendered moot and/or accommodated, and that presently pending claims 1-6 and 8-59 are in condition for allowance. Favorable reconsideration and allowance of the present application and the presently pending claims are hereby courteously requested. If in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (603) 668-1400.

Respectfully submitted,



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